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## Remarks

Claims Rejections under 35 USC 112

Applicant respectfully believes that the new claims submitted herewith overcome "112" rejections set forth in the Office Action. Specifically claim dependencies have been corrected per the Examiner's suggestions and antecedent bascs have been addressed.

Claim Rejections - 35 USC 102

Claims 4-6, 8-9 and 11 are rejected under 35 USC 102(e) as being anticipated by Hull.

Valid rejection under 35 USC 102 requires that each feature of a rejected claim be disclosed in a single reference. "For anticipation under 35 USC 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present." MPEP 706.02(a).

As shown below Hull does not disclose each feature of the rejected claims.

Claim Rejections - 35 USC 103

Claims 7, 12 and 14 are rejected under 35 USC 103(a) as being unpatentable over Hull in view of Harnisch.

Valid rejection under 35 USC 103(a) requires evidence of a suggestion or motivation for one skilled in the art to combine prior art references to produce the claimed invention. US Court of Appeals for the Federal Circuit (*Ecolchem inc. v Southern California Edison Co., Fed. Cir.*, No. 99/1043, 9/7/00).

The best defense against hindsight-based obviousness analysis is the rigorous application of the requirement for showing a teaching or motivation to combine the prior art references, according to the court

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Hull and Harnisch do not motivate or suggest to one skilled in the art to combine these references to produce Applicant's claimed invention.

Court of Appeals for the Federal Circuit confirmed the above principles in *In Re Sang-Su Lee* (00-1158). The court analyzed 35 USC 103 requirements starting from the Administrative Procedure Act and held (citations omitted):

"Tribunals of the PTO are governed by the Administrative Procedure Act, and their rulings receive the same judicial deference as do tribunals of other administrative agencies.

"The Administrative Procedure Act, which governs the proceedings of administrative agencies and related judicial review, establishes a scheme of 'reasoned decision making.' Not only must an agency's decreed result be within the scope of its lawful authority, but the process by which it reaches that result must be logical and rational.

"As applied to the determination of patentability vel non when the issue is obviousness, it is fundamental that rejections under 35 USC §103 must be based on evidence comprehended by the language of that section. (Emphasis added). When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. (Emphasis added)

"The factual inquiry whether to combine references must be thorough and searching. It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. Our case law makes clear

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that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. There must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the Applicant. Teachings of references can be combined only if there is some suggestion or incentive to do so."

As stated above, Hull and Harnisch do not motivate or suggest to a person skilled in the art to combine these references to duplicate the claims of the present invention.

The claims have been amended to overcome the rejections on the basis of the prior art. Specific discussion of the amendments to the claims follows.

The claims now recite new claims 20-35. Claims 1-19 are canceled.

Claims 20, 24, 28 and 32 are in independent form.

Claim 28, in principle, corresponds to claim 10, which was indicated to be allowable..

Claims 29, 30 and 31 correspond to claims 7, 12 and 14, respectively.

Independent claim 32 is similar to claim 28, with the exception that the compensating elements are defined to be in the form of a ring, as disclosed in lines 6 and 7 of paragraph [0029] of the specification.

Claims 28 and 32 should be allowable. Dependent claims 33, 34 and 35 correspond to claims 7 and 12. Independent claim 20 is based on claim 4, additionally amended by features disclosed in paragraphs [0009] to [0015] of the specification.

Dependent claims 21, 22 and 23 correspond to claims 5, 7 and 12, respectively.

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Similarly, claims 20 and 24 are based on claim 4, additionally amended by features from the specification disclosed in paragraphs [0009] to [0015] of the specification, as well as by one feature of claim 17. Dependent claims 25, 26 and 27 are based on claims 5, 7 and 12.

The invention as recited in independent claims 20 and 24 is a particular kind of passive thermal compensation. An important feature of this passive thermal compensation is that the compensating elements are arranged in the very neighborhood of the first optical element that is assumed to undergo some change in its form because of a change of its temperature, for example, because of heating by radiation being absorbed by the first optical element. The compensating elements are arranged within the region of the first optical element in a manner providing thermal conductivity between said first optical element and the compensating elements so that the compensating elements undergo approximately the same temperature change as the first optical element. Because of this temperature change of the compensating elements, the first and second optical elements undergo a displacement in an axial direction that is defined by both optical elements, so that the change of the optical properties of the first optical element because of the heating of the first optical element is compensated by a changed distance between both optical elements.

Independent claim 20 defines this concept of the invention somewhat more specifically than claim 24 in that it more specifically recites that the displacement provided by a length extension of the compensating elements is the same as the displacement of the focal point of the first optical element because of a heating of this first optical element. Claim 24 is somewhat less specific in that regard, i.e., the optical

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property of the first optical element being changed by a temperature shift of the first optical element will be compensated by the compensating elements, but is somewhat more specific regarding the material of the compensating elements because claim 24 specifies that the compensating elements comprise at least partly titanium.

The most pertinent prior art is Hull. Hull discloses an active compensation system that uses heating elements in the mounting connecting the primary mirror and the secondary mirror. In the case of a temperature change of the primary mirror 13, this temperature change will be measured. From the measurement signals a control signal is deducted and afterwards, a current is applied to the heating elements to compensate the effect caused by the temperature rise of the primary mirror by a heating induced change of the distance between the primary mirror and the secondary mirror. This active compensation system does not use thermal conductivity between the primary mirror and the compensating elements and there is no goal to ensure that the temperature rise of the compensating element is the same or nearly the same as the temperature rise of the primary mirror. Because of the active system the temperature rise of the compensating elements can be lower or much higher than the temperature rise that the primary mirror undergoes depending on the material of the compensating elements. The temperature rise of the compensating elements can be higher or lower than the temperature rise of the primary mirror just depending on material and lengths. Also, the Hull system is completely uncritical whether the compensating elements are arranged in the neighborhood of the primary mirror or are arranged at a further distance therefrom.

As can be seen from the above discussion of the present invention, on the one hand, and the prior art according to Hull on the other hand, one can easily see that a

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concept of the present invention, which now is more clearly defined in independent claims 20 and 24, is completely different from the concept of the Hull system. Common to both systems only is that a change of an optical property of the primary mirror because of a heating of the primary mirror is compensated by a change of the distance between the primary mirror and the secondary mirror (as in Hull) or a first optical element and a second optical element (as defined in claims 20 and 24), whereby the change in distance is induced by a thermal expansion of elements connecting both optical elements. However, the way in which compensation elements must be designed is completely in Hull compared to the present invention. With the system of the present invention, the material and the lengths of the compensation elements are dependent on the change of the optical property in dependence on a change of the temperature of the first optical element, whereas in the Hull system the material and the lengths of the compensating elements is nearly independent of the change of the optical property of the primary mirror, which has to be expected, due to a change of the temperature because these properties are controlled by the electronic control of the heating current for the compensating elements.

With respect to claim 5 (new claims 21 and 25), the Office Action states that Hull discloses at least one of the optical elements comprising a lens. In this regard, the Office Action refers to reference numeral 11 in column 4, lines 7-9. However, in this text portion, it is stated that reference numeral 11 designates an input window. In a mirror telescope as disclosed in Hull, an input window normally simply is an opening, and therefore, the reference to an input opening does not include any disclosure to the person skilled in the art that there could be a lens.

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Claim 17 was rejected in view of Hull and Harnisch. In Harnisch, the cone made from titanium ensures that at different temperatures, the inner tube 2 of the telescope is held in a fixed manner within the outer tube 1. Because the inner tube 2 and the outer tube 1 as well as the titanium cone are at the same or nearly the same temperature, the thermal expansion coefficients of the various materials used are critical. However, in the Hull system, the thermal expansion coefficients of the various materials are less critical because, due to the heating of the compensating elements, the temperature of the compensating elements can be different from the temperature of the primary mirror, the optical properties whereof are to be compensated. Therefore, the argumentation in the Office Action leading to a rejection of claim 17 neglects that, with the Hull system - though Hull could have used titanium for the compensating elements - there is no need and no advantage from the use of titanium instead of aluminum.

Because of the above arguments, we respectfully believe that all of the independent claims 20, 24, 28 and 32 should be allowable in view of the cited prior art. However, because the new independent claims submitted herewith include features that until now were not included in the claims, we are including in this Amendment after Final Action a request for continued examination to avoid rejecting the new independent claims as raising new issues.

This Amendment After Final Action and Request for Continued Examination are necessary to place the case in condition for allowance or better condition for appeal.

Wherefore, further consideration and allowance of the claims in this application is respectfully requested.

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A three-month extension of time in which to respond to the outstanding Office Action is hereby requested. Credit Card Payment Form PTO-2038 is enclosed to cover the prescribed Large Entity three-month extension fee of \$950, an additional claims fee of \$172 for two additional independent claims and the \$770 Filing Fee for Request for Continued Examination for a total of \$1892. Please charge any additional fees or credit any overpayments to Deposit Account 11-0665. A duplicate of this page is enclosed for this purpose.

Respectfully submitted,



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I hereby certify this correspondence is being submitted by facsimile transmission to Commissioner for Patents, Alexandria, VA, fax number 703-872-9306 on March 17, 2004.



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